DETAILED SILVICULTURAL PRESCRIPTION
Plumas National Forest (PNF)

Project Name: Tamarack CHimney Fire Salvage

Treatment Description: Post Fire Salvage and Reforestation

TREATMENT UNIT	Description	Unit Acres	SUID	Location (Setting)
1		250		n/a

Prepared By: *Ryan A. Davy* | Reviewed and Signature:/s/ | Date: 11/12/21 | **Original**/Revised

Objectives

1. Salvage of dead and dying trees to recover the economic value and support restoration objectives.
2. Reduce hazards to USFS personnel and the public.
3. Reforest stands to provide wildlife, watershed, botanical, and recreation benefits.

- Establish and maintain a pattern of area treatments that is effective in modifying wildfire behavior.
- Reduce the risk of insect/pathogen drought-related mortality by managing stand density levels.
- Design economically efficient treatments to reduce hazardous fuels.

Removal of fire injured or killed trees from the 2020 North Complex fire will contribute to the stand objectives by reducing fuel loading and lowering the risk of post fire beetle outbreaks. Improving landscape resilience to future disturbance events through density, size class, and species composition management will be critical to maintaining a healthy forested landscape. In most cases brush removal and/or oak pruning will effectively reduce competition for limited water and nutrients and reduce the susceptibility to future wildfire-caused tree mortality for many years. Forest restoration treatments will maximize the retention of resprouting oaks and other native hardwoods, to the extent that the trees promote stands that are resilient to insects and disease.

Stand-level Objectives: Establish/re-establish forested cover, via the artificial planting of seedlings following salvage harvest. Maintain stand through manual, mechanical, and chemical release methods for up to ten years post planting, or longer if monitoring shows a need.

Stand Data:

Region	Proc. Forest	Admin. Forest	District	State	Owner
05	11	11	03	CA	FS

Stand	Acres	Slope	Aspect	Elev. (ft)	Management Area	Prod. Class	Land Suitability Class
1	250	5-35%	N-NE	5300-5900	Pinchard Little Grass	5-6	500

Lat. /Long.	WUI (Y/N); CWPP	Fire Treatment (Int. or Final)		
*	Y	Final		

Stand(s)	Currently Meets Target	Can Defer	Can be Modified to Meet Stand Target
All	No. Near total mortality has left stands that are a risk to employees and the public and render their integrated infrastructure unusable.	No. Without immediate action the economic value of the standing timber will be lost. This will leave a hazardous fuel and safety situation for decades.	Yes. By salvaging and artificially regenerating the stand a diverse overstory can be established quickly. This will allow for future management options, including thinning, fuels reduction, and providing a safe recreation environment.

Existing Stand Conditions

The 2020 North Complex burned these stands at high severity (>75% BA loss). There are few to no trees. The overstory now presents a high risk to USFS employees working in the area and required the closure of the recreation facilities to the public until the risk is abated.

Grasses, forbs, shrubs and sprouting woody species have begun to re-establish in the first growing season. These combined with the large amount of fuel left standing (in the near term) and on the ground (in the mid-term) pose a significant reburn risk. This has been witnessed in similar stands on the Feather River RD and has the potential to set these stands on a frequent high severity fire feedback loop.

Little to no conifer regen has been witnessed, and historic drought and heat makes it unlikely there will be establishment of these germinates. As non-tree vegetation cover begins to establish, the likelihood of any residual conifer seed bank having successful regeneration will be small. Regeneration prediction models point to this as a likely outcome.

Desired Stand Conditions (*TARGET STAND*)

Throughout Stand Timeline (>50 years):
- Forest structure and function generally resemble pre-settlement conditions.
- High levels of horizontal and vertical diversity.
- Stands are composed of roughly even-aged vegetation groups, varying in size, species composition, and structure.
- Individual vegetation groups range from less than 0.5 to more than 5 acres in size.
- Tree sizes range from seedlings to very large diameter trees.
- Species composition varies by elevation, site productivity, and related environmental factors.
- Multi-tiered canopies, particularly in older forests, provide vertical heterogeneity.
- Dead trees, both standing and fallen, meet habitat needs of old-forest-associated species.
- Where possible, areas treated for fuels also provide for the successful establishment of early seral stage vegetation.

Mid-term Target (20-50 years):
- 150-300TPA of shade intolerant SMC and hardwoods.
- High torching and crowing index, reflecting high spatial and horizontal heterogeneity.

Designation by Damage Class
- Utilize Fire-injured Tree marking Guidelines based on Probability of Mortality (**Attached**)
- Leave 4 of the largest snags (>30" DBH) per acre.
- **All Species**
  - Probability of Mortality will be determined based on crown length killed by species and diameter class. A probability of mortality 0.5 (50%) will be used for determining trees within 200 feet of all system roads in Sale Area. A probability of mortality 0.7 (70%) will be used for determining trees within areas located outside of the 200 feet.
- **In Addition:**
  - True Fir
    - Use bark char on all true fir that do not meet crown kill criteria
      - < 10" DBH – any charring on more than 50% of bole circumference
      - ≥ 10" DBH – 100% charring of bole circumference and >15' high on low char side.
      - Bark char is being used as an indicator of likely cambium kill within some or all portions of charred area, it is not being used to predict tree mortality. True firs with this type of injury are subject to extensive decay, high potential for failure and elevated levels of tree mortality during drought.
      - True fir recommendations are the same for all areas of harvest units, including areas within 200 feet of roads.
  - Sugar Pine
    - Sample cambium whenever possible on trees that are completely charred around the base. For 0 to 3 dead samples Add 5 percentage points to crown kill criteria. For 4 dead samples Subtract 20 percentage points (= 40% crown length killed).

Planting
- Plant on a 15x15' spacing, w/ allowable spacing variance of 50%.
- Based on greenhouse availability, plant ponderosa pine, sugar pine, incense cedar, and Douglas-fir.
- Space the planted trees to include the regenerating oaks, utilizing the same spacing.
- This should result in 150-200 TPA.

- Utilize microsites (stumps and downed, large nurse logs, artificial shade) to assist in the protection of seedlings from trampling/herbivory and to minimize desiccation.
- Plant in late winter or early spring, aiming for a snow free site as soon as possible in 2023.

Herbicide Use
- To assisting in a successful reforestation, herbicide use is proposed.
- Fall 2023 application of glyphosate and tryclopyr will reduce brush competition in the unit and increase water availability for planted seedlings.
- **Please see attached Pesticide Use Proposal for detailed application instructions and plan.**

Herbicide	Restricted use	AI/AE per acre	Treatment Acres*	Product Rate*	Calibrated Volume*	Total Volume*
Rodeo (glyphosate)	No	AI: 5.4 lb/acre	≤250	4.0 qt/acre	10 gallons/acre	250 gal
Vastlan (tryclopyr choline)	No	AE: 0.6lb/acre	≤250	0.6 qt/acre	10 gallons/acre	250 gal

note to FACTS coordinator: These values should all be tracked and verified from field calibration calculations

Timeline		
Time	**Action**	**Unit(s)**
Spring 2023	Plant	1
Fall 2023	Release herbicide application	1